



## *Estimation, Methods for Macro Agricultural Statistics – Hungarian example*

Éva Laczka Ph.D.

Central Statistical Office, Budapest, Hungary – [eva-laczka@ksh.hu](mailto:eva-laczka@ksh.hu)

### **Abstract**

The system of agricultural statistics is one of the most regulated field of the EU Statistical System aimed at providing information, data for the planning of the Common Agricultural Policy, the monitoring and evaluation of its implementation. Its subsystems are the micro and macro statistics, EU macro-statistics are embodied in the Economic Accounts for Agriculture (EAA) which is in practice a satellite account of National Accounts. The function of the satellite account is to measure and analyse the income of agricultural activity.

The Member States of the European Union have been publishing EAA data since 1964, the uniform methodological requirements of EAA were published for the first time in 1989. Hungary joined the macro-system at the beginning of the 2000-ies and has been publishing data on the Hungarian agricultural sector since 1999. In the reference year two preliminary and one final accounts are compiled on agricultural output, the first estimates are produced in November of the reference year when the year has not finished yet.

EAA are based on agricultural surveys and numerous administrative data sources complemented by a great number of estimations. For the first estimates statisticians rely almost exclusively on estimation, because at that period statistical data sources are not yet available. Some statistical data sources are available for the second estimates, but even the production of final data requires several estimations. The measurement of agricultural labour input (Annual Working Unit – AWU) is of outstanding importance. The measurement, estimation of AWU is a challenge especially in the case of private farms, because in the majority of cases part-time agricultural activity must be transposed into full-time work equivalent. The other big task is to create the bridge between the activity based data of EAA and the National Accounts data based on economic branch approach.

The purpose of the presentation is to present the data sources, estimations related to the EAA and the problems to be solved.

**Keywords:** satellite account; EAA; estimates of the EAA; Annual Working Unit.

### **1. Introduction**

The annual agricultural output can be presented using different approaches. One possibility is to take into account on the basis of the detailed balance sheets the natural output of agriculture measured in tonnes. The value of the output is defined from the data of the balance sheets in the production account of EAA. The other approach is the National Accounts approach which compiles data on the activity of the agricultural branch regardless of the fact if all the activities carried out are agricultural activities or not (the activities are classified into the branches of the national economy according to the main activity of the enterprise). Due to the methodological differences between the two accounting systems, data on agriculture differ.

## 2. Economic Accounts for Agriculture (EAA)

The legal basis for EAA in the EU is Regulation (EC) No 138/2004 of the European Parliament and of the Council on the economic accounts for agriculture in the Community. The EAA is composed of **production, income and capital accounts** which are adequate for presenting the internal relations of the agricultural industry and can serve as the basis for branch models.

According to the requirements of the European Union, three estimations are made concerning the annual output of agriculture. The **first estimates must be produced in November of the reference year** (when the year has not finished yet), **the second estimates are done in January of the year following the reference year, final data must be compiled in September of the year following the reference year.** This schedule means that the first results and publication are based on preliminary information, estimations, for the second EAA data estimation is supplemented by some new data sources, but even the compilation of the final satellite account requires several estimations. In the case of production accounts estimates relate primarily to intermediate consumption, and for capital accounts they relate to the estimates of the volume of plantations and investments.

The reporting unit of the EAA is the holding which has two main types in Hungary: enterprises engaged in agricultural activity and private holdings which cover in practice any agricultural activity performed by households.

## 3. Indicators, data sources, methodology of the EAA

The main indicators of **production account** are gross output, intermediate consumption, gross value added, fixed capital consumption.

The main indicators of **income accounts** are compensation of employees, taxes on production, subsidies on production, factor income, net operating surplus, mixed income and net entrepreneurial income.

The main indicators of **capital account** are gross fixed capital formation, net fixed capital formation, changes in stock and capital transfers.

**Agricultural labour input** is a special indicator of EEA. Labour input of enterprises performing agricultural activity and private farms reveals great differences. While the persons employed in agricultural enterprises work usually 8 hours a day, in private farms it is not rare that that working hours amount to only some hours daily. The accounting of part-time and seasonal work made necessary the introduction of the concept of the annual working unit (AWU). AWU corresponds to the labour input of one person performing full-time agricultural activity during a whole year (1 AWU equals 1800 working hours). Part-time job transposed to its full-time work equivalent allows to compare labour input of agricultural holdings and private farms. The EU differentiates between salaried and not salaried work as well, the latter refers in practice to the agricultural activity performed by the family members of the household in private farms. The value of the work accounted in the salaried labour input corresponds to the value of “compensation of employees” of the Economic Accounts for Agriculture.

In the case of EAA, the use of surveys, administrative data sources and estimates are shown in the table below:

### Indicators, sources and methodology of EAA

Denomination	First estimates			Second estimates			Final data		
	Survey	Admin	Estimation	Survey	Admin	Estimation	Survey	Admin	Estimation
<b>Gross output</b>	X	X	X	X	X	X	X	X	x
intra-unit consumption							X		
processing by producers							X		
own consumption							X		
sales							X		
own account production for GFCF							X		
changes in stock							X		
<b>Intermediate consumption</b>	X	X	X	X	X	X	X	X	x
<i>Gross value added</i>	X	X	X	X	X	X	X	X	x
<b>Fixed capital consumption</b>			X			X	X		x
<b>Compensation of employees</b>	X		X	X		X	X		x
<b>Taxes on production</b>			X			X		X	
<b>Subsidies on production</b>		X			X			X	
<i>Factor income</i>	X	X	X	X	X	X	X	X	x
<i>Net operating surplus</i>	X	X	X	X	X	X	X	X	x
<i>Mixed income</i>	X	X	X	X	X	X	X	X	x
<i>Net entrepreneurial income</i>	X	X	X	X	X	X	X	X	x
<b>Gross fixed capital formation</b>							X	X	x
<i>Net fixed capital formation</i>							X	X	x
<b>Changes in stock</b>							X		
<b>Capital transfers</b>								X	
<b>Agricultural labour input</b>	X		X	X		X	X		x

#### 4. Bridge between EAA and National Accounts

Estimations are also needed to create “the bridge” between the system of national accounts and the satellite account which explains the differences between data based on an organisation/branch approach and those based on an activity approach.

Bridge table between Economic Accounts for Agriculture and National Accounts

EAA		National Accounts	
		Sector "A" (Agriculture)	...other Sectors (not "A")
Agricultural enterprises	← different data sources →	Enterprises (data come from Common Database)	
Private holdings	→ total come from EAA →	Self employed (source: NA)	NA - Households
		Self-consumption and small scale production	

#### Conclusion

The –activity type based- macro-results of agriculture are presented by the satellite account called EAA. Statisticians use for the compilation of the accounts about 10 surveys and 5-6 administrative data sources. Numerous estimations are also needed to compile the accounts. In the case of the first two sets of preliminary estimates, the results of the surveys are not yet available at the time of the preparation of the accounts. To a decreasing extent, but estimations are used for the compilation of the final results of the EAA as well. In the Hungarian practice two institutions are responsible for EAA, the main responsibility falls on the Hungarian Central Statistical Office, while estimations are made by the Research Institute of the Ministry of Agriculture. As a result of the common work of more than ten years the methodology is continuously developing and refined, nowadays data quality meets users' expectations.

#### References

[1] Regulation (EC) No 138/2004 of the European Parliament and of the Council of 5 December 2003 on the economic accounts for agriculture in the Community (Text with EEA relevance) , *Official Journal L 033 , 05/02/2004 P. 0001 - 0087*

[2] [www.ksh.hu](http://www.ksh.hu)